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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/785,408	02/25/2004	Takuya Kinoshita	056208.53297US	9808

23911 7590 02/02/2006  
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EXAMINER

MURALIDAR, RICHARD V

ART UNIT	PAPER NUMBER
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2838

DATE MAILED: 02/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/785,408

Applicant(s)

KINOSHITA ET AL.

Examiner

Richard V. Muralidar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 4, 5, and 8-11 is/are rejected.
- 7) ☒ Claim(s) 2,3,6 and 7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                                                 |                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                            | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>02/25/2004</u> . | 6) <input type="checkbox"/> Other: _____                                                |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

[b] The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4-5, and 8 are rejected under 35 U.S.C. 102[b] as being anticipated by Kadouchi [5675258].

With respect to Claim 1, Kadouchi et al discloses a method of monitoring the abnormality of battery equipment which stores electric power by being charged and discharges the stored power to a load [col. 1 lines 10-16], the method comprising the steps of: measuring the voltage and current of the battery equipment [col. 2 lines 23-25] at each power discharging to the load; getting the performance recovery characteristics [col. 6 lines 22-31; Table 1 experimental results] to the discharge current of the battery equipment based on the measured voltage and current; monitoring at least the variation of recovering voltage immediately before or after the ceasing of discharge to the load [col. 5 lines 34-37]; and diagnosing the abnormality of the battery equipment based on the result of monitoring [col. 5 lines 34-52].

With respect to Claim 4, Kadouchi discloses the steps of: getting the locus [referred to as “gradient a”- col. 7 lines 35-54 and col. 8 lines 1-11] of the discharge voltage characteristics to the discharge current of the battery equipment; and judging

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the battery equipment to be abnormal if the locus deviates from a reference locus [col. 8 lines 57-59 deterioration reference gradient  $a_{ref}$ ], causing the discharge voltage measured immediately before or after the ceasing of discharge to the load to become not higher than a predetermined voltage [col. 9 lines 14-19].

With respect to Claim 5, Kadouchi discloses an apparatus for monitoring the abnormality of battery equipment [col. 2 lines 36-41], which stores electric power by being charged and discharges the stored power to a load, based on the voltage and current of the battery equipment [col. 2 lines 23-25], the apparatus monitoring at least the variation of recovering voltage immediately before or after the ceasing of discharge to the load in regard to the discharge voltage recovery characteristics [col. 6 lines 22-31; Table 1 experimental results] to the discharge current of the battery equipment, and diagnosing the abnormality of the battery equipment [Fig. 3 col. 5 lines 34-52].

With respect to Claim 8, Kadouchi discloses a battery system comprising: battery equipment which stores electric power by being charged and discharges the stored power to a load [col. 1 lines 10-16]; a voltage sensor which measures the charging voltage and discharging voltage of the battery equipment [Fig. 2 voltage sensor 4]; a current sensor which measures the charging current and discharging current of the battery equipment [Fig. 2 current sensor 3]; and a controller [Fig. 2 the combination of deterioration detection circuit 10 and charge apparatus 12] which takes in the outputs of the voltage sensor and the current sensor and controls the charging and discharging of the battery equipment, the controller monitoring at least the variation of recovering voltage [col. 5 lines 34-37] immediately before or after the ceasing of discharge to the

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load in regard to the discharge voltage recovery characteristics to the discharge current of the battery equipment, and diagnosing the abnormality of the battery equipment [col. 5 lines 34-52].

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103[a] which forms the basis for all obviousness rejections set forth in this Office action:

[a] A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 9 is rejected under 35 U.S.C. 103[a] as being unpatentable over Kadouchi [5675258] in view of Toya [6943525].

With respect to Claims 9, Kadouchi discloses a battery system according to Claim 8, but does not specify all the electrical components (starter, controller etc.) of the vehicle that the battery charger is capable of operating in.

Toya discloses that the battery equipment comprises a secondary battery [Fig. 1 driving battery 2] which is installed on a vehicle such as a motor car [col. 1 lines 9-10] and used as energy source for engine starting [Fig. 1 battery 2 is used to start engine 8], and the controller comprises a battery controller [Fig. 1 battery control circuit 6] which controls the energy flow of the starter motor and generator [Fig. 1 motor generator 9], and the battery system is applied to the drive system of the car.

Kadouchi and Toya are analogous means of detecting the state of charging and discharging of vehicles' battery systems. At the time of the invention, it would have been obvious to one of ordinary skill in the art to include the vehicle's electrical components

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(i.e. starter, controller etc.) with Kadouchi's design for the benefit of explicitly illustrating the battery loads and its interconnections as they can impact the state of charge/discharge of the vehicle's battery.

Claim 10 is rejected under 35 U.S.C. 103[a] as being unpatentable over Kadouchi [5675258] in view of Swanson [6624533].

With respect to Claims 10, Kadouchi discloses a battery system according to Claim 8, but does not specify a distributed electric power source with AC to DC converter, an electric generator, or a battery that meets momentary over-demands from the load.

Swanson discloses a distributed electric power source which includes an AC-to-DC converter [Fig. 5 AC/DC converter] which charges the battery equipment up to the state of full-charge based on the commercial power source [Fig. 5 shore power], and an electric generator [Fig. 5 3 phase generator] which supplies, together with the battery equipment, electric power to the load [Fig. 5 taken at POWER OUT 120/240 VAC] by way of the AC-to-DC converter when the power supply from the commercial power source is shut off, with momentary load variations being treated by the battery equipment [col. 2 lines 7-9].

Kadouchi and Swanson are analogous electrical systems that utilize battery chargers. At the time of the invention it would have been obvious to one of ordinary skill in the art to add a battery deterioration detection means to Swanson for the benefit of knowing exactly when the backup battery would fail and thus degrade the backup ability of the distributed electric power source.

Claim 11 is rejected under 35 U.S.C. 103[a] as being unpatentable over Kadouchi [5675258] in view of Nomura [2003/0155160].

With respect to Claims 11, Kadouchi discloses a battery system according to Claim 8, but does not specify the drive system of a fuel-cell car.

Nomura discloses a drive system of a fuel-cell car [Fig. 1] which includes a fuel cell [Fig. 1 Fuel cell 13] which extracts electric power from fuel, and a motor controller [Fig. 1 power control section 14] which controls a motor [Fig. 1 driving section 15] based on power from the fuel cell and the battery equipment by way of an inverter [col. 4 lines 23-27], with momentary load variations being treated by the battery equipment [Fig. 1 storage battery 23] the response of which is faster than that of the fuel cell.

Kadouchi and Nomura are analogous vehicle electrical systems that depend on batteries for power. At the time of the invention, it would have been obvious to one of ordinary skill in the art to add the battery deterioration detection means to Nomura for the benefit of knowing exactly when the storage battery would fail, thus placing increased demand on the fuel-cell's electrical generation ability.

#### ***Allowable Subject Matter***

Claims 2,3,6, and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Claims 2, 3, and 6 are allowable over the art of record because the prior art

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does not disclose a judgment of abnormal if the discharge voltage is lower by a predetermined value than the predicted discharge voltage on the recovery pattern.

While the prior art provided by Kadouchi [5675258] does disclose a judgment of abnormality [col. 7 lines 7-13], this is based on the discharge voltage being higher (instead of lower) than an extrapolated discharge voltage. Kadouchi also does not disclose a correlation factor or its use in judging abnormality.

Claim 7 is allowable over the art of record because the prior art does not disclose a replacement judgment section that indicates the need of battery replacement if the cumulative current value is smaller than a cumulative current judgment value.

These differences are not anticipated or rendered obvious by the prior art of record.

### ***Conclusion***

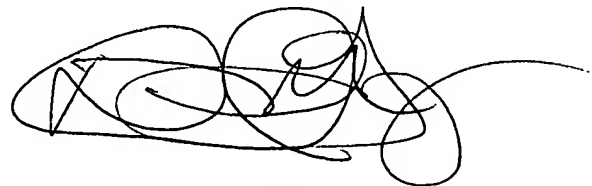
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard V. Muralidar whose telephone number is 571-272-8933. The examiner can normally be reached on Monday to Friday 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Gray can be reached on Monday to Friday 8-5. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RVM  
01/31/2006

A handwritten signature in black ink, consisting of several loops and a long horizontal stroke extending to the right.

**David Gray**  
Primary Examiner